

Project: Improving occupational health in Oregon: Turning data to action
Grant number: U60 OH008472
Budget period: July 1, 2010 – June 30, 2011

Jae P. Douglas, Principal Investigator
Oregon Health Authority, Public Health Division
971-673-1139 | jae.p.douglas@state.or.us

Occupational Health Indicator Component

Surveillance

Beyond calculating and disseminating the occupational health indicators, program staff engaged in a wide range of other occupational health surveillance efforts.

Due to a long delay in release of BLS Geographic Profile of Employment and Unemployment, staff explored using DataFerrett, a data analysis and extraction tool, to get data for parts of the Employment Profile in 2007. Staff explored using industry and occupation variables (P9 and P10), labor force variables (P3), and class of worker variables (P2) directly from the Current Population Survey to calculate these values. To test the validity of this method, data from prior years with published values from the official Geographic Profile were calculated using the new methods. Values were found to be nearly identical. The methods were shared with other state-based surveillance grantees.

Staff began an analysis of the Adult Blood Lead Epidemiology and Surveillance (ABLES) Program data. Preliminary examination of data between 2006 and 2010 show that the number of adults with elevated blood lead levels ($\geq 10 \mu\text{d/dL}$) has decreased, although not significantly. For cases related to a person's work, the most common industry reported was electrical equipment, appliance, and component manufacturing. Staff plan to write up these results into a newsletter and possibly a journal manuscript.

Staff analyzed accepted disabling workers' compensation claims among Oregon young workers by age group (10-18, 19-21, and 22-24 year olds) and calculated rates by employment using Quality Workforce Indicators data from the U.S. Census Bureau and Local Employment Dynamics. The results of this analysis demonstrate that targeted prevention strategies need to be developed for older teens and young adult workers, especially because child labor laws do not apply and offer protection after 18 years of age. The findings of this analysis were presented at several regional and national conferences. In addition, the results and prevention recommendations were synthesized into a manuscript, "Occupational injuries to Oregon workers 24 years and younger: An analysis of workers' compensation claims, 2000-2007," and published in a July 2010 edition of the *American Journal of Industrial Medicine*.

To expand on the above mentioned epidemiologic analysis of young worker injuries, staff conducted a spatial analysis using workers' compensation data and then produced maps of injury rates by county, and spatial statistics suggesting areas of high or low injury clusters. The analysis is significant since it provides important information about the distribution of young worker injuries and other factors that may influence their distribution in the state. Staff repeated the spatial analysis when they obtained and incorporated medical only claims from a commercial insurance carrier. The results were shared with members of the Oregon Young Employee Safety (O[yes]) coalition and presented at the Oregon Public

Health Association Conference in the fall of 2010. In addition, the findings are being synthesized into a manuscript for submission to a peer-reviewed journal.

Program staff began working with the Oregon Environmental Public Health Tracking (EPHT) program and other state-based occupational health surveillance grantees to incorporate a selected number of OHIs into the EPHT portal. Two Oregon program staff participate in a workgroup formed to integrate work-related lead poisoning data into the portal. The group has been working to assess the completeness of each state's data, identify a denominator to calculate rates, and evaluate the best possible way to present these data on the portal. Oregon staff drafted a how-to guide and data dictionary for the other states to use in piloting an indicator of adult elevated blood lead levels. Since occupation is a recognized source of exposure for many chemical and physical hazards found in the environment, the ability to include occupation in the EPHT portal will help to improve the utility of this tool. It will also help to expand and enhance partnerships between state-based occupational health surveillance systems and EPHT.

Program staff began to retrospectively analyze indemnity and medical cost data for accepted disabling workers' compensation claims. The cost data were linked back to claimant information via each claim's unique identifier. Staff plan to analyze data for OHI conditions of interest (amputations, burns, musculoskeletal disorders, carpal tunnel syndrome) as well as other combinations such as costs for young workers, costs for older workers, and factors associated with longer time-loss days paid. Occupational injuries and illnesses are costly. Having information on the economic costs of injuries and illnesses (including missed time from work as well as medical payments) allows us to more fully gauge the impact they have on the state.

Partnerships

Several agencies and organizations with an interest in improving the health and safety of young workers in Oregon assembled and formed the O[yes] coalition several years ago. The Oregon Public Health Division has been an active member of the coalition since it was formed and has worked in collaboration with other O[yes] members on various education/outreach efforts since the coalition's inception.

Among the coalition's accomplishments and outputs, the Public Health Division attended conferences and staffed exhibits on behalf of the coalition to raise awareness about young worker safety. Staff also continued to administer the O[yes] Facebook account as a means of involving teens and young adults in the coalition and building support for young worker health and safety.

With support from O[yes], program staff in collaboration with the Center for Research on Occupational and Environmental Toxicology (CROET) conducted focus groups to investigate young workers' views regarding workplace safety and health. Seventeen high school students from the Architecture, Construction and Engineering (ACE) Academy in Portland participated.

Participants were asked about current jobs and work history, as well as about job training and injuries at work. Many of them were currently employed (35%), and industry sectors included food service, retail, construction, agriculture, and childcare. Students worked a broad range of hours per week, reporting from 8 to 25 hours. The majority (71%) reported past employment, and industry sectors included the above plus manufacturing, forestry, and work for a retirement home, ski resort and moving service.

Most of the students reported receiving safety and health training from either current or past employers (76%). Some of them had been hurt at work (18%), while a majority (60%) reported almost being hurt on

the job (near misses). Of those who had been injured, 33% did not report the injury to their employers, and they stated that their injuries were minor when asked why they did not report. Those who reported an injury stated that their employers' responses were either positive or neutral.

The results from this qualitative research provide preliminary information about how young workers experience work and their knowledge and attitudes about workplace health and safety. This information will be used to evaluate the O[yes] coalition's current activities and strategies for youth engagement and advance their understanding and development of future prevention interventions for young workers.

Education and outreach

The Oregon Public Health Division overhauled its website to enhance usability. Through this major effort, division staff, including members of our occupational health team, migrated all of the web content to a new web design platform, reorganized the content by topic rather than by program, integrated web 2.0 features, and redesigned and made aesthetical improvements to the web layout. We have been revising the web content and will continue to continue making improvements through the next grant year. However, recent improvements include adding the 2000-2008 OHIs and testing different methods of making the presentation of these data more user friendly to diverse audiences.

Staff presented the OHIs and findings from special analyses, such as the epidemiologic analysis of young worker injuries in Oregon, to various partners throughout the year. While the majority of our partners are already committed to improving worker health and safety and may not be surprised by the findings of our occupational injury/illness analyses, they still report these analyses to be of high value and important for understanding the true magnitude of work-related injuries and illnesses in the state. In some instances, our program partners have reported using our results in their own presentations to raise awareness and illustrate the extent of work-related injuries and illnesses.

Program staff collaborated with Oregon Hazardous Substances Incident Surveillance program and the O[yes] coalition and held an exhibit about worker safety and appropriate glove use at the January 2011 Annual Northwest Agricultural Show in Portland, Oregon. In addition, program staff had an exhibit booth at the biennial Oregon Governor's Occupational Safety & Health Conference, the largest occupational health and safety conference in the Pacific Northwest in March 2011. Program staff talked to numerous attendees about our program, O[yes], and general worker health and safety. More recently, program staff in collaboration with the O[yes] chair, Dede Montgomery, gave a presentation on young worker injuries during the 2011 Public Health Week. Also during that week, staff showed all of the public service announcement video submissions that were received from high school students for the annual O[yes] young worker safety video contest.

Presentations

Green, Mandy. "Putting young worker health on the map: Occupational injuries to Oregon workers 24 years and younger, 2000 – 2009." Oregon Public Health Association (OPHA) Conference. Corvallis, OR. 18 October 2010. Conference poster presentation.

Green, Mandy and Dede Montgomery. "Youth speak out about working safe: Oregon Young Employee Safety Coalition video contest winners." Oregon Public Health Week, Safety is no accident: Prevent injuries and violence in Oregon. Portland State Office Building, Portland, OR. 7 April 2011. Presentation.

Publications

Walters J, Christensen C, Green M, Karam L, Kincl L. Occupational injuries to Oregon workers 24 years and younger: An analysis of workers' compensation claims, 2000-2007. *Amer J Ind Med* 2010;53(10):984-994.

Centers for Disease Control and Prevention (CDC), Wuellner SE, Walters JK, St. Louis T, Leinenkugel K, Rogers PF, Lefkowitz D, Davis LK, Gelberg K, Zak MJ, Castillo D. Nonfatal occupational injuries and illnesses among older workers—United States, 2009. *MMWR* 2011;60(16):503-508.

Centers for Disease Control and Prevention (CDC), Green MK, Harrison R, Leinenkugel K, Nguyen CB, Towle M, Schoonover T, Bunn T, Northwood J, Pratt SG, Myers JR. Occupational highway transportation deaths—United States, 2003-2008. *MMWR* 2011;60(16):497-502.

Oregon Fatality Assessment and Control Evaluation (OR-FACE)

The OR-FACE project of *Improving Occupational Health in Oregon: Turning Data to Action* is conducted as part of the fundamental surveillance program of the Public Health Division at the Oregon Health Authority, in partnership with the Center for Research on Occupational and Environmental Toxicology (CROET) at Oregon Health & Science University (OHSU). OR-FACE is supported by a cooperative agreement, 2U60OH008472-06, from the National Institute for Occupational Safety and Health (NIOSH).

The current overall objectives of the OR-FACE program are to:

- Maintain the core occupational fatality surveillance, investigation, assessment, and prevention activities of the existing OR-FACE program.
- Develop intervention strategies designed to reduce occupational fatalities associated with falls.
- Develop intervention strategies to reduce occupational fatalities for older workers, aged 65 and over.
- Continue interventions in current areas of concern related to young workers, immigrant workers, commercial fishermen, and logging; and develop other outreach activities in priority areas as appropriate.
- Collaborate with institutional partners to develop effective intervention strategies.
- Evaluate program activities.

Surveillance

According to preliminary data for the two most recent calendar years, OR-FACE recorded 46 fatalities in 44 incidents in 2010, and 22 incidents in 2011 to date. Our current surveillance system uses: (a) a Google alert keyword search, (b) quarterly reports of death certificates marked “at work” from Oregon Vital Records, (c) Oregon OSHA fatality notification reports, (d) a daily search of numerous websites, and (e) fatality reporting from the Oregon Emergency Response System. The use of the Google alert keyword search has improved our first-notification system and significantly augmented the span of our surveillance. Primary data sources include death certificates, Oregon OSHA, Medical Examiner, police investigation, and news reports, Workers’ Compensation records, and occasionally other records, such as photo disks, business profiles, hospital or emergency response records, or investigation reports from other sources. Over the past year, OR-FACE shared de-identified data comparing OR-FACE to Oregon CFI fatalities. The total number of incidents, 2003-2007, recognized by OR-FACE was 352; the total number by Oregon CFI was 356. Comprehensive surveillance and clarity in coding are essential to compare results with other fatality registers, and the comparison of unique data points over 2003-2007 showed substantial agreement.

Investigation

In depth investigations are conducted for selected cases by contractors with relevant industry-specific expertise. Contractors work in conjunction with OR-FACE to produce reports, which are reviewed by a board of professional safety experts prior to publication. Three investigation reports were published in the past year and a fourth is currently under final review.

2008-1: *Mechanic killed by excavator bucket during maintenance* (under review)
Outlines numerous risk factors during heavy equipment maintenance.

2006-24: *Logger killed under rigging when carriage drops* (Mar-2011)

2008-7: *Rigging slinger killed by swinging log in yarding turn* (Mar-2011)

Highlighted key safety issues in logging and expanded the OR-FACE logging safety aim. These reports complimented the *Yarding Logging Safety and Yarding and Loading* handbooks OR-FACE published in 2010.

2007-57: *Temporary mill worker killed in fall down manlift shaft* (Sept-2010)

Addressed proper training procedures for temporary and foreign-born workers and workers who have a visual impairment.

Assessment

OR-FACE analyzes incident data to identify and summarize trends, grouping incidents by coded industry (NAICS), occupation (SOC), and event (OIICS), and by demographic and other variables, such as the specific source or setting of the injury. Each OR-FACE incident is summarized with an abstract.

Abstracts and incident data are presented in an annual report. The *OR-FACE 2008 Annual Report* (June-10) recorded 57 fatal occupational incidents, with 60 worker deaths. The Annual Report included hazard alerts related to hydraulics, logging, and suicide. The following notable trends occurred in 2008:

- Violence was the second most common category of events in 2008, with 9 involving suicide, mostly related to financial crisis and family problems.
- A higher proportion of incidents than usual involved middle-aged workers (45-64). Violence accounted for one-fourth of the incidents. All suicide victims were aged 48-58. Only one incident involved an older worker, aged 77.
- Transportation and contact events involving mobile machinery and heavy trucks were a principal source of fatal injury, including tractors and farm machinery, dump trucks, construction equipment, trailer rigs, a skidder, and an all-terrain vehicle.

Education and outreach

OR-FACE safety materials are published online, directly by mail, and through collaboration with target organizations. A postage-paid evaluation card included in each booklet provided an additional opportunity for user feedback: "...Very well written and user friendly." (*Fallers Logging Safety*-Anonymous). "Very good booklet." (*Fallers Logging Safety*-Anonymous). "I have looked over the brochure and it is a very sound, information-based... I especially like the 'real time' feel to the introductory stories." (*Know the Hazards of Driver Distraction*- Oregon Department of Transportation). "I give to students who are entering the work force. I have found this booklet is a great resource for our young workers." (*Young Workers Stay Alive on the Job*- Anonymous).

Other noteworthy outreach activities for the reporting period include:

- The OR-FACE investigation report, *Logger killed under rigging when carriage drops*, was featured in the June 2011 edition of *Safety + Health* (circ. 86,000+).
- Considerable targeted distribution was achieved through a second mailing (Apr-2010) of the *Fallers Logging Safety* booklet to 250 saw shops and equipment dealers in Oregon and Washington State. A postage-paid order/evaluation card, included in each booklet, was effective, generating a significant response and opportunity to mail additional copies. In total, approximately 5,000 booklets have been distributed to date.

- OR-FACE published the popular brochure, *Talking, dialing, texting... know the hazards of driver distraction*, in collaboration with a safety trainer from SAIF (An Oregon Workers' Compensation insurance provider), to use in statewide safety seminars (Nov-2010). Additional dissemination of the brochure included the Oregon Department of Transportation, school-based driver education programs, and the Oregon Department of Administrative Services.
- OR-FACE participated in the Oregon Agriculture Show (Jan-2011) and the Governor's Occupational Safety and Health Conference, Oregon's largest safety event (Mar-2011).
- OR-FACE participated in three separate safety events in May 2011: the NW Youth Careers Expo, the Women in Trades Career Fair, and the national American Industrial Hygiene Association conference.
- OR-FACE partnered with several Oregon Health & Science University (OHSU) and governmental safety centers at the *Safety Streets* event, where over 1,700 children learned about injury prevention (Aug-2010).

| Circulation of safety materials | July 2010-June 2011 |
|---|----------------------------|
| Fallers Safety booklet | 1,812 |
| Young Workers safety booklet | 101 |
| Distracted Driving brochure | 2,650 |
| Average monthly website page views/ document downloads | 897/5 |

Partnerships

OR-FACE staff members strengthened relationships with CROET Outreach, researchers at other universities, and community partners. This resulted in greater OR-FACE presence at regional conferences and events related to occupational safety and joint research projects, such as the crab fishing safety intervention with the UW.

Safety initiatives

Young workers

OR-FACE continued to participate in the Oregon Young Employee Safety, O[yes], Coalition by leading two projects: (a) conducting several focus groups to engage young workers in discussing workplace hazards, issues impacting their health and safety, and outreach strategies (Apr-2011), and (b) conducting a needs assessment with employers (Mar-2011). OR-FACE will analyze and summarize the data collected from O[yes] activities to inform future OR-FACE interventions regarding young workers.

Commercial fishermen

OR-FACE, in partnership with researchers from the University of Washington (UW), was awarded a grant from the Pacific Northwest Agricultural Safety and Health Center (PNASH) to survey commercial crab fishermen to investigate their experiences and views relative to critical safety issues (Sept-2010). 83 commercial crab fishermen were surveyed over two days in Newport, OR, the most active port for crab fishing in Oregon (Nov-2010). We anticipate completion of the study, and a subsequent manuscript, later this year.

Logging

OR-FACE published the Oregon OSHA-funded, *Yarding Logging Safety Handbook* (Oct-2010). The handbook tells the stories of 18 fatal incidents in yarding operations in Oregon over 6 years, 2003-2008, with accompanying safety recommendations. The handbook is currently used to instruct fieldwork operations in the Oregon State University, Forest Engineering Program.

Older workers

Incidents in Oregon, 2003-2009, involving workers, aged 65 and over, comprised 11% of total incidents among a group of workers representing only 4% of the total national workforce. Fifty-six percent of these fatal incidents were transportation-related. We have been actively pursuing intervention research opportunities in this area, including a grant application for a pilot study in December of 2010 (favorably reviewed but not funded) and a manuscript on the topic (in progress) using Oregon and national data to identify intervention opportunities.

Presentations

Zoller, E. *Oregon Commercial Crab Fishermen Safety Survey and PFD Evaluation*. Presented at the 2011 Oregon Academy of Science Annual Meeting, Portland, OR. February 26, 2011.

Hammond, T. *Tree Fallers Point-of-View Video Observation Study*. Presented at the Oregon Program Evaluators Network 2010 Conference. Portland, OR. September 22, 2010.

Publications

- Hammond T, Rischitelli G. Defining critical safety behaviors in a point of view video observation study of tree fallers at work. *Int'l J Occup Environ Health* (accepted for publication)
- Annual report: *OR-FACE Annual Report 2008*
- Investigation report: *Mechanic killed by excavator bucket during maintenance* (pending)
- Investigation report: *Temporary mill worker killed in fall down manlift shaft*
- Investigation report: *Logger killed under rigging when carriage drops*
- Investigation report: *Rigging slinger killed by swinging log in yarding turn*
- Safety brochure: *Talking, dialing, texting... know the hazards of driver distraction*